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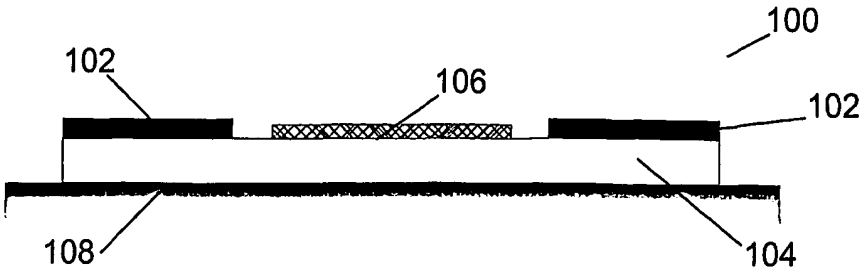
(54) Title: METHOD FOR ULTRA-FAST CONTROLLING OF A MAGNETIC CELL AND RELATED DEVICES



(57) Abstract: The present invention relates to a device and corresponding method for ultrafast controlling of the magnetization of a magnetic element. A device (100) includes a surface acoustic wave generating means (102), a transport layer (104), which is typically functionally and partially structurally comprised in said SAW generating means (102), and at least one ferromagnetic element (106). A surface acoustic wave is generated and propagates in a transport layer (104) which typically consists of a piezo-electric material. Thus, strain is induced in the transport layer (104) and in the ferromagnetic element (106) in contact with this transport layer (104). Due to magneto elastic coupling this generates an effective magnetic field in the ferromagnetic element (106). If the surface acoustic wave has a frequency substantially close to the ferromagnetic resonance (FMR) frequency $v_{FMR}$the ferromagnetic element (106) is absorbed well and the magnetisation state of the element can be controlled with this FMR frequency. The device can be used in an RF-magnetic resonator, a sensor and a camera. The corresponding method can be used for ultrafast reading-out and switching of magnetic components and in magnetic logic.

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